Elementary Check and Connect
A Retrospective Comparison Study and Time-Series Analysis

An Evaluation Prepared for Dakota County Community Services by Chrissy Guyer under the supervision of Gay Bakken 2001

Executive Summary

This evaluation of Elementary Check and Connect was prepared for Dakota County Community Services. Check and Connect is a student engagement program that had been receiving funds from the county for several years. Earlier reports submitted to the county indicated general program success. However, a control group was not included when the program began. In order to better gauge the program's effectiveness, the county commissioned this retrospective comparison study, which compares the Check and Connect students to a group of similarly situated students who did not receive the intervention. County officials also requested an analysis of whether or not the number of years that a child experienced the Check and Connect intervention contributed to increased success in the program.

There are three key findings of this study. First, the comparison study confirmed the hypothesis that Check and Connect was effective in increasing student engagement. The findings of comparison of means, cross-tabulations, and regression analyses all indicated that Check and Connect students did fare better than the comparison group. This study compares the two groups in terms of attendance outcomes, measured as the change in absenteeism between the 4th grade (1997-98 school year) and the 7th grade (2000-01 school year). The average attendance change for the Check and Connect group was .08. This indicates that absenteeism decreased. On the other hand, the average attendance change for the comparison group was a -.91. This indicates that absenteeism for the comparison group actually increased or got worse. The findings also indicate that Check and Connect students fared better than the comparison group even while facing higher incidence of certain risk factors.

In addition to comparing the Check and Connect students to the comparison group, this study also incorporates general attendance trends theses districts. Recent data obtained from the Minnesota Department of Children and Learning indicates that children in these districts normally experience an increase in absenteeism from 4th to 7th grade. Data from the 1997-98, 1998-99, and 1999-00 school years indicate that averages in these districts generally changed by -.83 from 4th to 7th grade. Thus, like the comparison group, the district averages reflect an increase in absenteeism from 4th to 7th grade. Thus, the Check and Connect students, even while facing significant risk factors, experienced greater progress than their peers as a whole in terms of improvement in engagement from 4th to 7th grade.

A second key finding of this study confirmed the hypothesis that students who faced risk factors were more likely to experience increased disengagement from 4th to 7th grade. This negative effect was even more significant for students who faced multiple risk factors. Risk factors in this study included poverty, being open to a county social worker, receiving special education, and having a sibling with school problems. Various regression analyses indicated that whether or not the student was in the comparison group or the Check and Connect group, experiencing risk factors contributed to a decreases in school engagement.

The final key finding of this study suggests a relationship between time in the program and student improvement. Cross-tabulation results indicated that majority of students in the first year of the program did experience improvement. Students in the second year of the program showed less success than those in the first year. However, students in their 3rd and 4th years in program showed

increased percentages of improvement. Although the cross-tabulation did not prove to be statistically significant, an analysis of variance confirmed that there was a statistically significant relationship between time in program and improved school attendance.

Program Background

Check and Connect is a student engagement program designed to promote active participation in school and to help students stay on track to graduate. It was developed with the active participation of students, parents, and educators. Dropout prevention literature suggests that the presence of a caring supportive adult in the life of a child decreases their likelihood of negative outcomes in the child's life. Check and Connect targets students who possess truancy risk factors and assigns a monitor to work closely with them and their families. The Check and Connect elementary pilot program was implemented in 1997 in Dakota County. The model for the pilot was adapted from the original Check and Connect program affiliated with the University of Minnesota's Institute on Community Integration (Discussion Paper: Research Design for a Retrospective Comparison Study 2000).

General Purpose of the Study

Three individual outcome reports on the elementary Check and Connect program have been submitted to Dakota County. The findings from these reports indicated general improvements in school engagement. However, because there was no control group when the project was implemented, it was not known how these students would have fared if they had not received the intervention. Further, county officials wanted information on the relationship between the number of years in the program and additional benefits. This study addresses these issues in order to help policymakers conduct a rigorous cost benefit analysis and make future funding decisions.

Research Design: Retrospective Comparison Study

Students from neighboring school districts were selected for the comparison group in this retrospective comparison study. The students in the comparison group, like the Check and Connect students, were fourth graders during the 1997-98 school year. The goal of the comparison selection was to match the comparison group with the Check and Connect group in terms of percentage absent and risk factors.

Students who were chosen for the Check and Connect pilot had met a certain risk profile including both school and non-school related risk factors. Over half received Title 1 services and over one-third were in special education programs. Roughly half have had a case open to a county social worker. In addition, many of the Check and Connect students face more than one risk factor, which places them at even higher risk for truancy. It was important to select a comparison group who had a similar risk profile. The comparison students were chosen as part of a two-tiered selection process.

Tier 1:

- Students who were absent more than 7% of the 1997-98 school year or had received special education services were identified.
- Information about additional risk factors was documented for the students identified during the first phase.

Tier 2:

- Thirty-seven individual students were chosen, one-by-one, for the comparison group.
- For each Check and Connect student, a comparison student, who best matched the risk profile of the Check and Connect student, was placed in the comparison group. When there was more than one student who closely matched the risk profile of a Check and Connect student, a random selection was made.
- The risk factors included in the profile were 3rd and 4th grade absence rates, receiving special education, being open to a county social worker, and experiencing poverty.

Limitations: Due to the retrospective nature of this study and due to resource constraints, the Check and Connect referral and selection process could not be replicated for the comparison group; the two-tiered selection process was the best available method for choosing a comparison group. The risks included in the selection profile are not an exhaustive list of risk factors important in predicting school engagement. There are other important risk factors that the Check and Connect students face such as living with a single parent and having academic difficulties. Information on

every important risk factor could not be obtained for this study. However, the risk factors included in this study are highly correlated with other risk factors that could not be included.

Table 3 on page 9 illustrates general attendance trends for three previous classes in these districts, and it illustrates that normally students in the Check and Connect district have a higher 4th grade and 7th grade absence rates than students in the comparison group districts. Because the Check and Connect students come from higher risk districts, coming up with a perfectly comparable group is impossible. As a result the comparison group has a lower baseline percentage absent than the Check and Connect group. This difference is not statistically significant. Furthermore, the comparison study attempts to control for these differences, and it focuses on change in absence rates rather than raw absence data.

Different proxies for poverty were used for the two groups. The indicator for the Check and Connect group was receiving Title 1 services; while, the indicator for the comparison group was receiving MFIP benefits. In addition, sibling history information was not considered for the baseline group selection for the comparison group; however, it was added later.

Comparison of Groups: 1997-98 Baseline Data

Comparison of proportions and means tests were conducted to determine if the baseline groups were statistically comparable in terms of attendance and risk factors.

Table 1
Baseline Comparison of Means

	N	% Absent 97-98	% Special Education	% Social Worker	% MFIP/ Title1	% Sibling History
Check and Connect Group	37	11.97%	37%	52%	49%	n/a
Comparison Group	37	11.65%	35%	46%	49%	n/a
Significance value		.837	.862	.647	.995	

Note: These are Two-Tailed Tests

The information in Table 1 summarizes the many risks that the students in both groups face. Table 1 illustrates that the Check and Connect group has a higher percentage of students in special education, a higher proportion of students with cases open to a social worker, and a higher average

percentage absent rate. This indicates that the Check and Connect group, on average, is a slightly more at-risk population. However, these differences are slight and not statistically significant at the 5% or 10% level. This means that at a 90% or 95% confidence level, that there is no meaningful difference between the two groups.

The numbers displayed under "% Absent 97-98" denote the average percentage of days absent during the 1997-98 school year for the students in the respective comparison and Check and Connect groups. The numbers under the special education, social worker, and MFIP/Title 1 headings are the percentage of students in each group who have received those services. The significance value is a number that indicates the statistical significance of the differences between the two groups. A low number suggests that the difference between the two groups is real. For example, a significance value of .05 corresponds with a 95% confidence that a difference is real and not due to chance.

Comparison of Groups: 2000-01 Data

Attendance data was collected in at the end of the 2000-01 school year. The absence rates for students in both the comparison and control groups were recorded. An absence change variable was calculated for each student. It is important to note that the statistical analyses in this report focus on comparisons between the groups in terms of absence *change* between 4th and 7th grade rather than raw attendance in 7th grade. The rationale behind this focus on change is discussed in the limitations section above.

Attendance data for the siblings of comparison group students was also collected. "Sibling History" for the comparison group was defined as siblings who missed 10 or more days during the 2000-01. A sibling history variable for the comparison group was created from this information. The comparison sibling variable is not wholly comparable to the Check and Connect sibling history variable because the latter measure encompasses school problems other than just attendance problems.

Due to student mobility, information was not available for a number of students at the end of the 2000-01 school year. Originally, there were 37 students in both groups. The Check and

Connect group dropped to 21, and the comparison group dropped to 25. Because of the losses, comparison of means tests were necessary to see if the groups were still comparable in terms of risk factors and original 1997-98 attendance data. Comparisons of means tests were also conducted to evaluate the differences between the two groups, incorporating the 2000-01 data and the sibling history variable.

Findings: Comparison of Means Tests

Table 2 illustrates the results of the statistical comparison tests. On average, the Check and Connect group has fared better than the comparison group. The Check and Connect group had an average 12.19% absence rate in 1997-98 and an average 12.11% absence rate in 2000-01. The comparison group was absent on average 10.72% of the 1997-98 school year and 11.63% of the 2000-01 school year. Thus, the average change was an improvement of .08 for the Check and Connect group and a decline of .91 for the comparison group. This change in absence rate is not statistically significant at the .05 level. Thus, we cannot say with 95% confidence that the differences in absence change between the two groups are due to the program effects and not due to chance.

It is important to point out that although the comparison group had a lower incidence of 7th grade absenteeism (11.63%) than the Check and Connect group (12.11%), the focus of this report is a comparison of absence *change or improvement.* Table 3 displays overall attendance trends for these districts, and it shows that students in the comparison districts normally have lower rates of absenteeism than students in the Check and Connect districts. What is meaningful for this study is not a comparison of the raw attendance rates, but of the absence change between 4th and 7th grade.

Table 2
Comparison of Means Including 2000-01 Attendance Data

	N	% Absent 97-98	% Absent 00-01	Absence Change 97/98 - 00/01	% Special Education	% Social Worker	% MFIP/ Title1	% Sibling History

Check and Connect Group	21	12.19%	12.11%	+.08	38%	40%	50%	88%
Comparison Group	25	10.72%	11.63%	-.91	32%	44%	44%	56%
Significance value		.364	.806	.688	.674	.793	.697	.027

Note: These are two-tailed tests.

The population of Check and Connect students dropped from 37 in 1997-98 to 21 in 2000-2001. In addition, 2000-01 attendance information was available for only 25 of the 37 comparison group students because some students moved out of the comparison districts during the three-year period. Because of these mobility losses, it was necessary to recalculate and compare the original absence rates and risk factors for both groups in order to determine if the two groups are still similar in terms of risk factors and original attendance. These tests indicate that differences between the two groups remain low and are not statistically significant at the .05 or .10 level. Taking the mobility losses into consideration, the Check and Connect group has an even higher percentage of students who received special education and MFIP or Title 1 services. The Check and Connect group also has a higher average percentage absence in the 1997-98 school year. In contrast, the comparison group has percentages of absenteeism risk that are lower than they were at the baseline comparison. *One possible explanation is that the Check and Connect program may have retained a number of high-risk children who otherwise would have been lost to mobility.*

The Check and Connect group also has a higher percentage of students with sibling history problems, and this difference is statistically significant at the .05 level. However, the sibling variables are not completely comparable because the Check and Connect staff had more complete information about sibling history when they coded the data. It is possible that the Check and Connect group is a higher risk in terms of sibling history, but it is difficult to draw affirmative conclusions about the difference in this regard.

The "% Absent" columns again indicate average absence rates for the students in the respective groups. The attendance change variable was computed by subtracting the percentage absent during 2000-01 school year from the percentage absent during 1997-98. A positive number

for the attendance change variable indicates that the absence rate was lower in 2000-01 than in 1997-98 school year and that the attendance improved.

Findings: General Trends in the Relevant School Districts

The above comparison of means tests examines the attendance change for the Check and Connect and Comparison groups. Students in these groups were selected because they met a risk profile. In order to better understand this data, it is helpful to consider what a "normal" attendance change from the 4th grade to the 7th grade would be for children in these school districts. Ideally, one could examine attendance change data for the relevant classes or district as a whole during these school years. Unfortunately, the data on mean absence rates for the 7th graders in these districts were not available in time for inclusion in this study. However, general attendance data for prior years was available from the Minnesota Department of Children, Families, and Learning.

Data for the previous three classes were averaged and evaluated. An average of three prior classes was used because that average would better reflect general trends than would attendance data from a single earlier class. Overall percent absent for 4th grader was collected and averaged for the 1994-95, 1995-96, and 1996-97 school years. Similarly, the overall percent absent 7th graders was collected and averaged for the 1997-98, 1998-99, and 1999-00 school years. As in the comparison study, an absence change variable was calculated by subtracting the average percent absent in the 7th grade from the average percentage absent in the 4th grade. The tables below illustrate these data for the students in the Check and Connect districts, the comparison group districts, as well as these districts combined.

Table 3
Overall Mean Attendance for Three Earlier Classes
4th Grade to 7th Grade

	Mean Percent Absent 4th Grade	Mean Percent Absent 7th Grade	Mean Absence Change 4th to 7th Grade
Check and Connect District	4.27	5.41	-1.14
Comparison District	4.19	4.77	-.58
Combined	4.25	5.08	-.83

Source: Minnesota Department of Children, Families, and Learning

Table 3 illustrates what a "normal" absence rate might be for a 4th grader and for a 7th grader in these districts. The Check and Connect group experienced an improvement in school engagement (absence change: .08). Table 3 illustrates that students in the Check and Connect districts would normally experience decreased levels of engagement from the 4th to 7th grade (absence change: -1.41). Check and Connect students face much higher risks for disengagement than the students as a whole, yet they still experienced an improvement in school engagement. Comparatively, the comparison group fared worse (absence change: -.91) when compared with the students as a whole in the comparison group districts (absence change: -.58). This is not surprising considering the comparison group faced higher incidence of risk than the students as a whole, and the comparison group did not receive the Check and Connect intervention services. This is further evidence that the Check and Connect program was effective in decreasing absenteeism and improving engagement.

Findings: Cross-Tabulation

The previous statistical tests compared the means or averages of the absence change variable. An average is only a single number and it is not the only way to represent a general trend or spread. Therefore, a cross-tabulation was created and a chi-squared test was conducted to see if Check and Connect students or comparison students were more likely to fall into different outcome categories. Several categorical variables were created to represent three possible outcomes for the students in both groups. The three categories were "improved", "stable", and "declined" attendance. Students whose absenteeism got better by two or more percentage points were placed in the "improved" group, and students whose absenteeism got worse by two percentage points or more were placed in the "declined" group. Students whose absence change rates were between ±2% were defined as "stable".

The cross-tabulation results in Table 3 illustrate that the Check and Connect group has a higher percentage (42.9%) of its students that can be classified as "Improved Attendance" than the

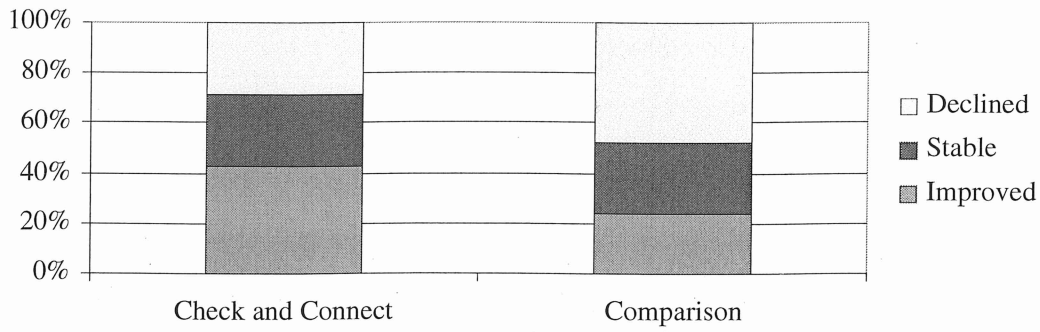
comparison group (24%). The Check and Connect group and comparison group have roughly the same percentages of students that fall into the "Stable Attendance" category—28.6% versus 28%. The Check and Connect has a lower percentage (28.6%) of students who fall into the "Declined Attendance" group than the comparison group (48%). These results suggest that the Check and Connect group fared better than the comparison group. However, the Chi-Square statistic, which measures the statistical significance of cross-tabulation, is .309. This means that the differences between the two groups are not statistically significant at the .05 or .10 level.

Table 4
Cross-Tabulation Comparison

Category	Check and Connect	Comparison
Improved Attendance	42.9%	24.0%
Stable Attendance	28.6%	28.0%
Declined Attendance	28.6%	48.0%
Total	100.1%	100%

The bar chart below graphically illustrates the differences between the Check and Connect group and the comparison group. The blue area represents the percentages of students who fall into the "Improved" categories. The purple areas and white areas represent the "Stable" and "Declined" categories, respectively.

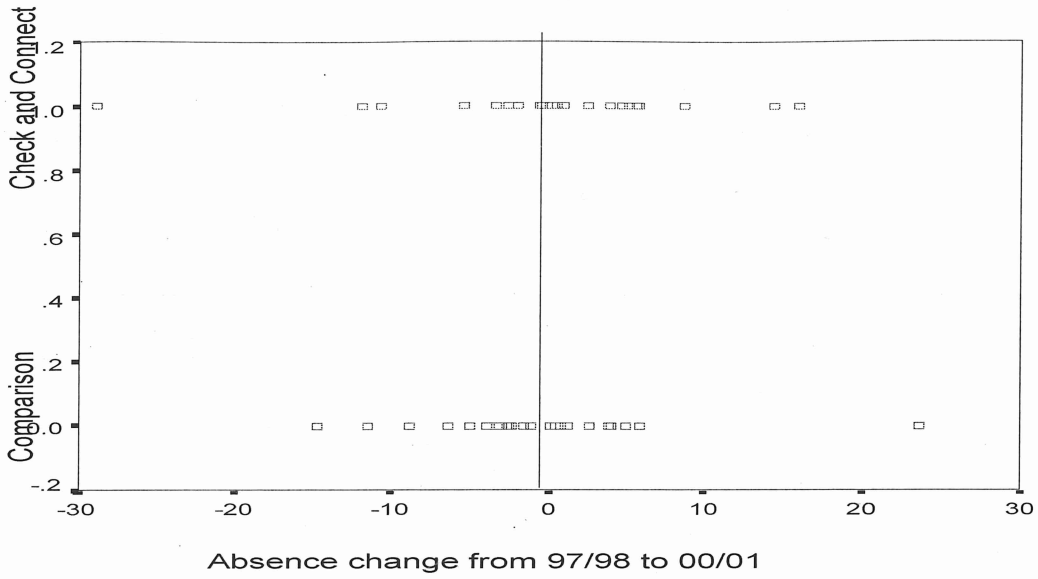
Graph 1
Percentage of Students in Engagement Categories for Both Groups



Findings: Scatter Plot

Next, a scatter plot was created to graphically display the range in the absence change variable for both groups. In Graph 2, the top line is the Check and Connect group and the bottom line is the comparison group. *There are more points on the Check and Connect line that are clustered to the right side of the vertical line, which indicates a higher occurrence of improvement.* This graphical representation is consistent with the earlier findings that the Check and Connect group fared better on average than the comparison group in terms of improved attendance.

Graph 2
Scatter Plot of Absence Change for Both Groups



Declined Improved

Findings: Regression Analysis

Regression analyses were conducted to determine whether certain factors contributed to an improvement or decline in attendance. The first regression was an analysis including both groups with the absence change variable as the dependent variable.

Table 4 sums up the regression findings. The special education and sibling history variables have negative coefficients, which are statistically significant at the .10 level. A negative coefficient indicates that, holding the other variables constant, the variable leads to a decline in attendance. *Thus, with this model, there is 90% confidence that qualifying for special education or having a sibling with history of attendance problems has a negative effect on the attendance change from 97/98 to 00/01.*

The Check and Connect variable has a positive coefficient. A significant positive coefficient indicates that, holding the other variables constant, the variable leads to an improvement in attendance rate. The Check and Connect coefficient has a significance level of .394, which

means that it is not statistically significant. Qualifying for MFIP/Title1 services and being open to a social worker also all had negative coefficients. However, these coefficients are also not statistically significant, so one cannot confidently draw conclusions about the effects of those variables.

Table 5
Regression analysis of Both Whole Group

Dependent Variable is Absence Change from 97/98 to 00/01

Independent Variable	Coefficient	Significance Value
Special Education	-4.920*	.066
Open to county Social worker	-3.294	.175
MFIB/Title1	-4.080	.122
Sibling History	-1.778*	.084
Check and Connect	2.224	.394

Note: These are two-tailed tests.
* Statistically Significant at the .10 level.

Another regression, which included a cumulative risk variable, showed similar results. A variable called "total risk factors" was created where the numeric value was the sum of the number of risk factors each student faced. *The regression results in Table 5 indicate that facing a large number of risk factors contributed to a decline in attendance rates.* This relationship was statistically significant at the .01, .05, and .10 level. *This means, with 99% confidence, one could say that facing multiple risk factors contributes to a decline in school engagement.* This finding is consistent with the theory that students who face multiple risk factors are particularly susceptible to decreased school engagement. In addition, controlling for this cumulative risk variable, the coefficient for participation in Check and Connect is positive. However, the relationship is not statistically significant. Thus, one cannot draw affirmative conclusions.

Table 6
Regression analysis of Both Whole Group

Dependent Variable is Absence Change from 98/98 to 00/01

Independent Variable	Coefficient	Significance Value
Total Risk Factors	-3.980***	.000
Check and Connect	2.118	.364

Note: These are two-tailed tests.
***Statistically Significant at the .01 level.

Findings: Alternative Models

The above findings represent several different ways of analyzing whether or not the students who participated in Check and Connect fared better than those who did not receive the intervention. These analyses are different interpretations of the trends of attendance change between 1997-98 and 2000-01. The scatter plot, Graph 2, illustrates the general trends of the numeric absence change for both groups. There are two easily observable outliers, one within each group. The outliers are the points that are far removed from the general cluster within each group. It is often not advisable to discard outliers because they are legitimate pieces of data. However, comparison of means and regression findings are means-based analyses, and means can be easily influenced by the presence of outliers. Because the attendance change of only these two students deviated greatly from the general trend for each group, a comparison of means and regression analysis were re-run with these two outliers removed.

The results of the comparison tests run with the two outliers removed are displayed in Table 6. The Check and Connect students fared better in terms of attendance change than the comparison group (+1.53 versus –1.91). The difference between these results and the earlier results is that the difference between the two groups in terms of attendance change is now statistically significant at the .10 level. *This means that we can say with 90% confidence that the difference in attendance change between the two groups is not due to chance. This finding strongly supports the finding that the majority of Check and Connect students fared better than the comparison group. This was true*

although the Check and Connect group faced higher percentage of all the risk factors except for receiving the services of a social worker. The differences between groups in terms of the risk factors, except of sibling history, are again not statistically significant at the .10 level.

Table 7
Comparison of Means Including 2000-01 Attendance Data
Comparison with Two Outliers Removed

	N	% Absent 97-98	% Absent 00-01	Absence Change 97/98 – 00/01	% Special Education	% Social Worker	% MFIP/ Title1	% Sibling History
Check and Connect Group	20	12.5%	10.97%	+1.53	35%	37%	47%	88%
Comparison Group	24	10.0%	11.93%	-1.93	33%	42%	46%	58%
Significance value		.108	.572	.062	.910	.755	.923	.050

Note: These are two-tailed tests.

The regression results in Table 7 confirm the findings of the comparison of means test in Table 6. The regression results in Table 7 show that, with the outliers removed, there were statistically significant differences between the two groups in absence change.

Table 7 summarizes a regression with the two outliers removed from the analysis. The special education and social worker variables both have negative coefficients and are statistically significant at the .10 level. This suggests that these two variables contributed to decreases in school engagement for the students in both groups. The coefficient for the Check and Connect variable is also statistically significant at the .10 level, and it has a positive sign. This means that holding the risk factors constant or equal, participation in Check and Connect lead to an increase in school engagement.

Table 8
Regression Analysis
With Two Outliers Removed

Dependent Variable is Absence Change from 97/98 to 00/01

Independent Variable	Coefficient	Significance Value

Special Education	-3.510*	.073
Open to county Social worker	-3.402*	.063
MFIB/Title1	-1.656	.392
Sibling History	-2.262	.283
Check and Connect	3.572*	.066

Note: These are two-tailed tests
*Statistically Significant at the .10 level.

Table 8 displays results from a regression run including the total risk factor variable and participation in Check and Connect variable, removing the two outliers from the analysis. The coefficient for the total risk variable is negative and statistically significant at the .10 level. This strengthens an earlier finding that facing several risk factors contributes to decreases in school engagement. The coefficient for Check and Connect is positive, and it is significant at the .05 level. This regression suggests that holding cumulative risk constant, participation in Check and Connect led to an improvement in attendance.

Table 9
Regression analysis of Both Whole Group
With Two Outlier Removed

Dependent Variable is Absence Change from 98/98 to 00/01

Independent Variable	Coefficient	Significance Value
Total Risk Factors	-2.697***	.001
Check and Connect	3.755**	.024

Note: These are two-tailed tests
**Statistically Significant at the .05 level
***Statistically Significant at the .01 level.

Findings: Length of Time in Check and Connect

The above analysis indicates that, although not all of the results of statistical tests were significant, the Check and Connect students did improve more than the comparison group even while facing higher risk. Dakota County decision makers not only wanted to know whether Check and Connect contributed to increased school engagement for the pilot groups, but also whether the length in time in Check and Connect has an effect on school engagement levels. In other words, did students who had been in Check and Connect for longer periods of time experience greater improvement than students who had not been in Check and Connect for as long?

In order to analyze the effect of additional years receiving Check and Connect services, data regarding elementary students currently open to Check and Connect were placed into 4 different categories. The categories assigned were "up to 1 year", "up to 2 years", "up to 3 years", and "up to 4 years". The groups do not include students who would have been placed in the previous category. For example, the "up to 2 years" group include only students who received more than 1 year and less than 2 years in Check and Connect. A cross-tabulation and Chi-Square test were conducted to determine if students who fall into these categories were more or less likely to have declined, improved, or remained stable in terms of attendance. For these analyses, "Improved Attendance"

was defined as a greater than 4% improvement in attendance; "Stable Attendance" was defined as –4% to +4% attendance change; and "Declined Attendance" was defined as a 4% or more increase.

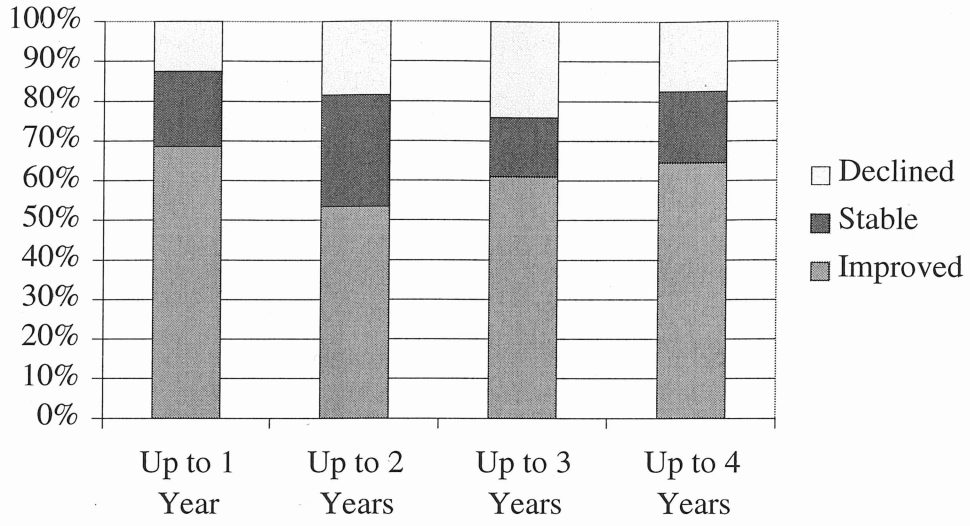
Table 10
Cross-Tabulation

Category	Up to 1 year	Up to 2 years	Up to 3 years	Up to 4 years
Improved Attendance	68.8%	53.5%	60.9%	64.6%
Stable Attendance	18.8%	27.9%	15.2%	17.7%
Declined Attendance	12.5%	18.6%	23.9%	17.7%
Total	100.1%	100%	100%	100%

N=207

The cross-tabulation shows that 68% of the students in the "up to 1 year category" fall into the "Improved Attendance" category. The results also indicate that 53.5% of the "up to 2 years"; 60.9% of the "up to 3 years"; and 64.6% of the "up to 4 years" students fall into the "Improved Attendance" category. This Chi-Square statistic for this analysis is .631. Thus, this cross-tabulation is not statistically significant and definitive conclusions about the difference within the categories cannot be drawn. However, the pattern of the cross-tabulation suggests that students may have experienced a "honeymoon" period during the first year of the intervention. There may also have been a drop off in improved attendance in the second year with increases during the both the 3rd and 4th years in Check and Connect.

Graph 3
Time in Program and Engagement Categories



It is important to note that this is not a longitudinal study; therefore, it does not track the same students as they experience more time in Check and Connect. A longitudinal study would better measure the relationship between time in program and increased school engagement, as it would follow the same students. Time and monetary constraints prevented an involved longitudinal analysis. Nevertheless, all of the students chosen for Check and Connect in a given year meet a certain profile and face similar risks. There is no reason to believe that the students within the different time in program groupings are different in terms of these risk factors.

The cross-tabulation displayed in Table 9 included students involved with Check and Connect at all age levels. School engagement literature suggests that students often experience increased disengagement with school once they reach Junior High (Eccles and Adler). The data from the Minnesota Department of Children, Families, and Learning corroborates this literature as it shows general increases in absenteeism from 4th to 7th grade. In order to control for this additional risk factor, additional cross-tabulations were conducted, separating the Junior High age children from the younger children. Table 10 summarizes the results of the length of time in program and

change in attendance cross-tabulation including only those children under age 11. Table 11 summarizes the results of the same cross-tabulation for students age 11 and older.

Table 10 and Graph 4 show findings that are very similar to those in Table 9 and Graph 3. Of students in the "up to 1 year" category, 70.4% have "improved" attendance. Further, 52.2% of the "up to 2 years"; 63.6% of the "up to 3 years"; and 81.8% of the "up to 4 years" students fall into the "Improved Attendance" category. This Chi-Square statistic for this analysis is .401; so, again definitive conclusions cannot be drawn. These analyses suggest the general trend for students under age 11 matches closely the general trend of the entire group. Children appear to have experienced a "honeymoon" period during the first year of the intervention. In the second year, there appears to be a drop off in improved attendance. But, the improvement increases during the both the 3rd and 4th years in Check and Connect.

Table 11
Cross-Tabulation Including Students Under Age 11

Category	Up to 1 year	Up to 2 years	Up to 3 years	Up to 4 years
Improved Attendance	70.4%	52.2%	63.6%	81.8%
Stable Attendance	18.5%	34.8%	18.2%	9.1%
Declined Attendance	11.1%	13.0%	18.2%	9.1%
Total	100%	100%	100%	100%

N=94

Graph 4
Time in Program and Engagement Categories for Students Under Age 11

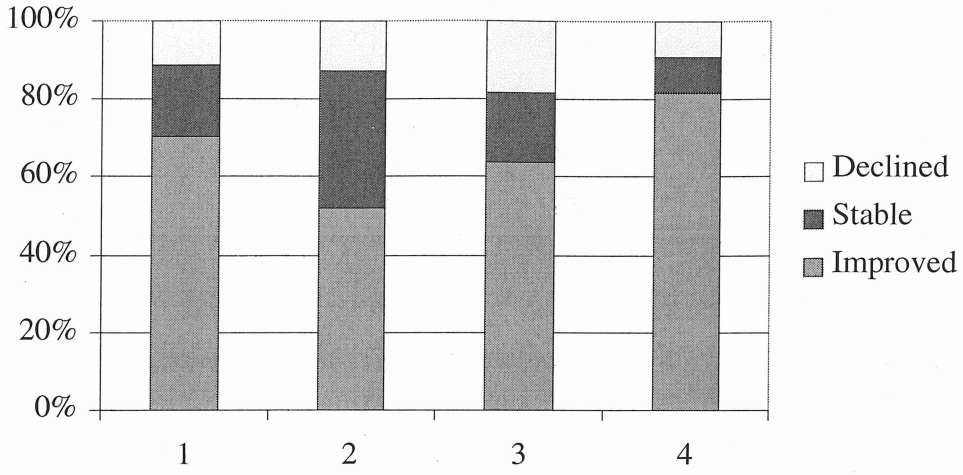


Table 11 and Graph 5 illustrate the cross-tabulation results when only students age 11 and older are included. It is difficult to make affirmative statements about the relationship between time in program and outcome because the significance value of this cross-tabulation is .901. The major difference between this cross-tabulation and earlier ones is that there does not appear to be a "honeymoon" period for children over age 11. Unlike the other cross-tabulations, there is not a majority of students in the "up to 1 year category" who fall into the "improved attendance" category. Like the other cross-tabulations, there is an occurrence of increased percentages of "improved attendance" for students who had more years of exposure.

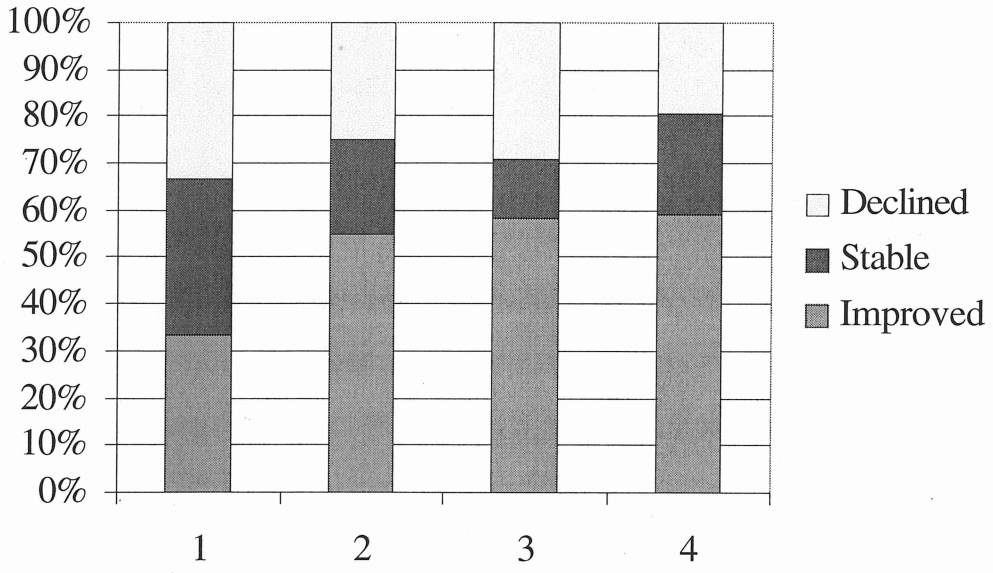
Table 12
Cross-Tabulation Including Students Age 11 and Older

Category	Up to 1 year	Up to 2 years	Up to 3 years	Up to 4 years

Improved Attendance	33.3%	55.0%	58.3%	58.9%
Stable Attendance	33.3%	20.0%	12.5%	21.4%
Declined Attendance	33.3%	25.0%	29.2%	19.6%
Total	100.1%	100%	100%	100%

N=104

Graph 5
Time in Program and Engagement Categories for Students Age 11 and Older



Findings: Analysis of Variance

In addition to the above cross-tabulation, an analysis of variance was undergone to examine the relationship between the time in and success of the program. The analysis of variance tested whether or not the number of years the child was in Check and Connect (measured as the categorical variable for number years in program) contributed to the whether or not the student improved, declined, or remained stable. This analysis controlled for differences among the children

in terms of other variable such as risk factors and the percentage of absence for the baseline and current years. The results indicated that there was a statistically significant (significance value= .032) relationship between time in the program and whether or not the student's engagement improved, declined, or remained stable.

Recommendations and Conclusions

The major finding of the comparison study is that the Check and Connect students did experience greater improvements in school engagement than the students in the comparison group. Analyses from comparison of means tests, cross-tabulations, and regressions were similar. Comparison of means showed that Check and Connect student faced a slightly higher, though not statistically significant, occurrence of risk factors. The Check and Connect students on average experienced an improvement in engagement from 4th to 7th grade, while comparison group experienced decrease levels on engagement. A regression that controlled for different risk factors indicated that Check and Connect had a positive effect on absence change . This indicates that holding the risk variables constant, participation in Check and Connect contributed to an improvement in school engagement. The differences between the Check and Connect and comparison groups were not always statistically significant. However, when two outliers were removed from the analysis, the results were consistent and statistically significant.

This study also reveals that Check and Connect students fared better than typical students in their district making the transition from 4th grade to 7th grade. Data reflecting general trends for students in the Check and Connect district show that students normally face higher absenteeism in the 7th grade than in the 4th grade. However, even with higher incidence of risk factors, the Check and Connect students experienced improvements in absence change from the 4th to 7th grades . On the other hand, faced with higher risk, the comparison group fared worse than typical students in their district.

The implications of the above findings are that Check and Connect has been successful in doing what it was designed to do. A cost-effectiveness analysis would give officials a better dollar value estimate of the returns on the investment in the Check and Connect program. However,

clearly Check and Connect has been valuable to the county as well as to the participating the students and families.

Another major finding was that the more risk factors a student faced, the less likely the students were to experience improved attendance. The implication of this finding is that policy makers should be strategic in assigning resources. A successful school engagement program should target and prove successful for students who face multiple risk factors.

Dakota County decision makers also wanted to know whether additional time in Check and Connect led to increased improvement. This time-series analysis found differences in improvement between students who had been in the program for different periods of time. A cross-tabulation showed that during the first year of the program, students faced improvements in attendance. After a drop in the second year, the improvement continued in the third and fourth years. Although the cross-tabulation did not prove to be statistically significant, an analysis of variance confirmed that there was a statistically significant relationship between time in program and outcome. This resurgence in improvement may not have been realized if the program had not continued for the 3rd and 4^{th} years. It is possible that the improvement trend would continue in further years as well. The policy implication of this finding is that staying with Check and Connect program for the long term has increased its value to the county.

References

Eccles, J., Midgley, C., & Adler, T.F. (1984). Grade-related changes in the school environment: Effects on achievement motivation. In J.G. Nicholls (Ed.), Advances in motivation and achievement: Vol. 3 The development of achievement motivation (pp. 283-331). Greenwich, CT: JAI Press.

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